

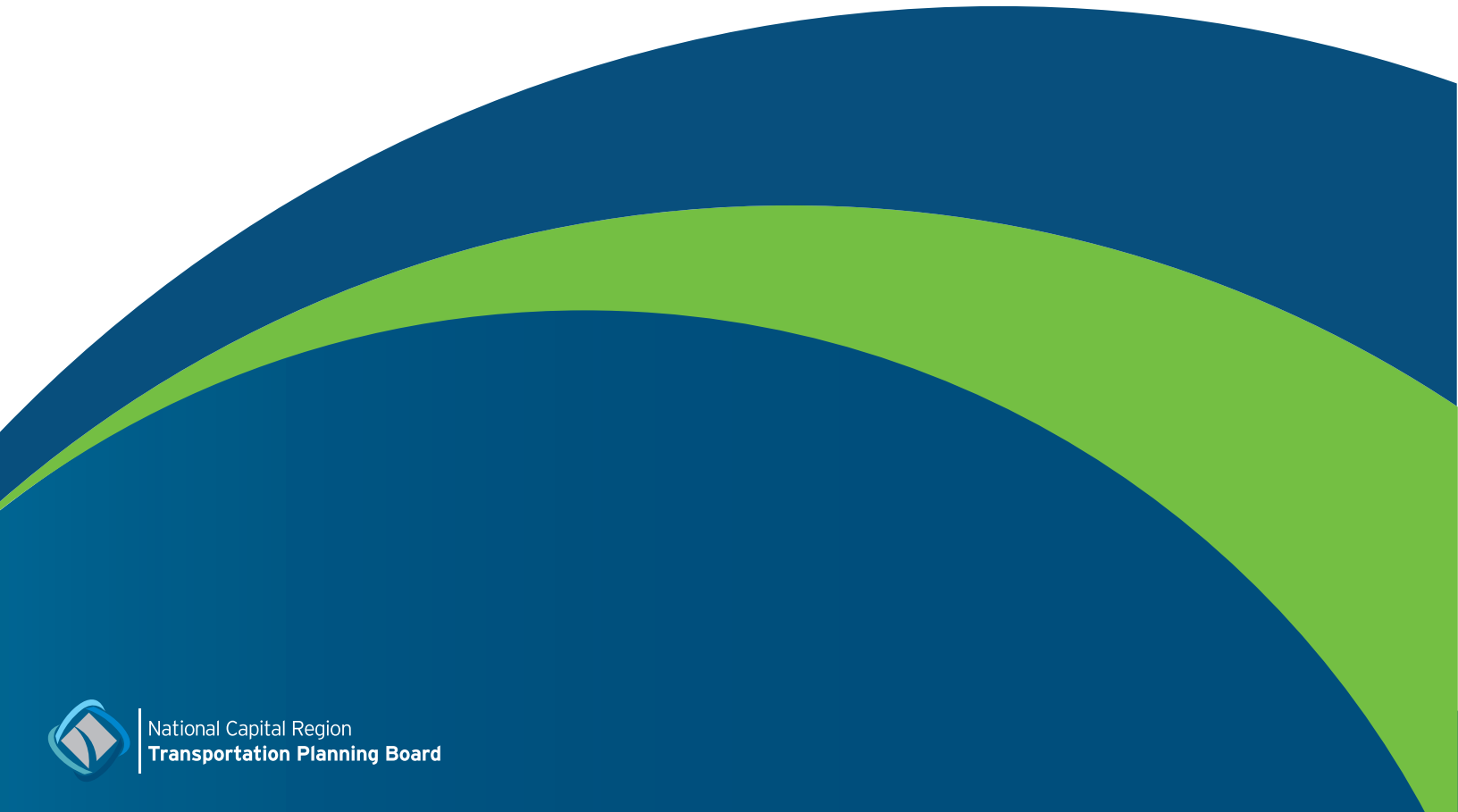


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# **A Summary of the TPB and COG Scenario Study Findings**

**Informing Planning for the Metropolitan Washington Region**

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# TRANSPORTATION PLANNING BOARD (TPB) SCENARIO PLANNING STUDIES – SUMMARY OF FINDINGS

This document is a companion document to the high-level summary of TPB Scenarios. This document reviews the eleven scenario studies that COG and the TPB have conducted over the last 15+ years and presents a summary of findings.



National Capital Region  
**Transportation Planning Board**

**TPB SCENARIO PLANNING STUDIES – SUMMARY OF FINDINGS:  
Prepared by TPB staff based on reports from past scenario studies.**

**ABOUT THE TPB**

The National Capital Region Transportation Planning Board (TPB) is the federally designated metropolitan planning organization (MPO) for metropolitan Washington. It is responsible for developing and carrying out a continuing, cooperative, and comprehensive transportation planning process in the metropolitan area. Members of the TPB include representatives of the transportation agencies of the states of Maryland and Virginia and the District of Columbia, 24 local governments, the Washington Metropolitan Area Transit Authority, the Maryland and Virginia General Assemblies, and nonvoting members from the Metropolitan Washington Airports Authority and federal agencies. The TPB is staffed by the Department of Transportation Planning at the Metropolitan Washington Council of Governments (COG).

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# TABLE OF CONTENTS

1. Scenario Summary Purpose	1
2. Regional Context: the TPB as the Region's MPO	1
3. What the TPB has Learned Through the Scenario Studies	3
4. What the TPB Members Can Do with this Information	10

# LIST OF TABLES

TABLE 1 TPB SCENARIO STUDIES	4
TABLE 2 FUTURE COMPARED TO TODAY: 2022 PLAN FORECAST VS. NO CAPACITY ENHANCEMENTS	5
TABLE 3 FUTURE COMPARED TO TODAY: 2022 PLAN FORECAST VS. ONLY TRANSIT ENHANCEMENTS	5
TABLE 4 FUTURE COMPARED TO TODAY: 2022 PLAN FORECAST VS. ONLY HIGHWAY ENHANCEMENTS	6
TABLE 5 FUTURE COMPARED TO TODAY: PLAN FORECAST VS. MAXIMUM ENHANCEMENTS	6
TABLE 6 COMPARISONS TO CLRP FORECAST 2040 CONDITIONS: ALTERNATIVE STRATEGY SCENARIOS	7
TABLE 7 FUTURE COMPARED TO TODAY: PLAN FORECAST VS. ALTERNATIVE SCENARIOS	8
TABLE 8 COMPARISONS TO CLRP FORECAST 2040 CONDITIONS: ALTERNATIVE STRATEGY SCENARIOS	8
TABLE 9 FUTURE COMPARED TO TODAY: PLAN FORECAST VS. MAXIMUM ENHANCEMENTS	8
TABLE 10 CCMS SUMMARY OF GHG REDUCTIONS ESTIMATED FOR ALL TRANSPORTATION SCENARIOS UNDER ALL ELECTRIC GRID CASES (% REDUCTIONS FROM 2005 LEVEL)	9
TABLE 11 ESTIMATED CHANGE IN VMT FROM CARS AND LIGHT-DUTY TRUCKS FROM MS.3 STRATEGIES	10

# SUMMARY OF TPB SCENARIO FINDINGS

This document describes the reasoning for developing a summary of scenario findings; provides context based on the Transportation Planning Board's (TPB) role in the region; summarizes what the TPB has learned about strategies to advance many of the TPB's goals and priorities around transportation; and describes how this information should be used to update the TPB's 2024 long-range transportation plan (LRTP).

## 1. Scenario Summary Purpose

The TPB has conducted 11 scenario summaries over the last 15 years. This document summarizes the findings of these recent scenario studies. It serves as a reference document for TPB member agencies as they reexamine the projects, programs, and policies in the current long-range transportation plan and as they consider their input to the 2024 LRTP update. This summary is intended to assist transportation related decision-making of the TPB member agencies in choosing projects, programs, and policies to add to the LRTP that implement the strategies that have shown the greatest potential to advance the TPB's goals.

TPB member agencies are advised to consider the projects included in the current LRTP (Visualize 2045 update) and evaluate how well the projects reflect the scenario findings and advance the TPB's policy framework. Additionally, member agencies should note the inputs to the constrained elements of the LRTP will be required to demonstrate that funding needed to implement, operate, and maintain them is reasonably expected to be available. Projects, programs, and policies should have gone through the required (local, sub-regional, state, or federal) process. Consequently, not all the member agencies' projects, programs, and policies that advance the TPB's planning priorities can be represented in the constrained element of the next LRTP. However, these could be considered for inclusion in the unconstrained part of the LRTP.

## 2. Regional Context: the TPB as the Region's MPO

The TPB, as part of its responsibilities as a metropolitan planning organization (MPO), develops the regional LRTP. The LRTP includes regionally significant and federally funded transportation projects and programs planned to be implemented by the TPB members' transportation agencies. A broad set of regional principles and goals developed by the TPB constitutes the policy framework to inform the LRTP and shape the region's transportation system. The various elements of this policy framework are derived from the following documents: The Vision, Region Forward, Regional Transportation Priorities Plan, the Aspirational Initiatives, and climate goals.

### TPB PLANNING PRINCIPLES, GOALS AND STRATEGIES

The policy element of the TPB's LRTP are based on the following principles: Equity, Prosperity, Accessibility, Livability and Sustainability. The goals for the LRTP, rooted in these principles, are Maintenance (state of good repair), Safety, Reliability, Affordability and Convenience, Efficient System Operations, Environmental Protection and having a Resilient Region with Livable and Prosperous Communities.

The TPB, through its various regional planning activities, has identified a diverse set of strategies to advance the regional goals for its members to consider as part of their transportation planning and programming actions. The strategies that the TPB has studied in its scenario studies to achieve its planning goals are grouped under the following themes: Land-Use; Transportation, including Roadway, Transit, and Bike/Pedestrian and operations technologies; Travel Demand Management (such as telework);

Legislation/Policy (e.g., cordon fees, Vehicle Miles Traveled Fees); and Vehicle Technologies and Fuels (e.g., electrification, clean fuels).

Additional description of the principles, goals and strategies are articulated in the (draft as of November, 2022) [TPB's synthesized policy framework](#).

## WHERE ARE WE TODAY?

This section provides information on the existing conditions of the region and a baseline for performance of the transportation system today<sup>1</sup> to put the scenario findings in context of “where we are now.”

### Baseline

- 1) The region is:
  - **Vast:** about 3,500 square miles, 23 counties and cities in parts of Virginia and Maryland plus the District of Columbia
  - **dense:** 5.7 million people and 3.4 million jobs
  - **with a robust transportation network** (more than - 17,000 lane miles of roadways, one urban and two commuter rail systems with 302 miles of rail tracks and 152 stations, 532 HOV/toll lanes, 15 local and commuter buses, at least 10 paratransit services).
- 2) A **large amount of travel occurs daily:** 18 million person trips of which 14 million are non-work related (20 percent are work related). A majority, 59 percent, of these trips are in carpools, vanpools, or by people walking, biking, or taking transit. All these trips log about 119 million VMT each day.
- 3) A reasonably **good degree of synergy exists between the region's land-use and transportation:**
  - about two-thirds of the jobs are within mixed-use regional Activity Centers and 41 percent are near High-Capacity Transit (HCT) stations
  - more than 50 percent of the jobs and population are within one-half mile of approximately 800 miles of off-road walk/bicycle trails, and
  - more than a quarter of commuters have HOV/Express lanes along their commute route.

This has resulted in about 7.2 million auto users sharing their rides, 1.2 million riders on rails and buses, about 2.2 million people walking and bicycling, on an average weekday.
- 4) **The current LRTP** reflects a mix of multimodal transportation strategies and projects and targeted land-use practices to better manage forecast growth in the region. It shows meaningful progress towards improving mobility and accessibility over the next 20 years.
  - More people than at present will live in mixed use regional Activity Centers (35 percent) and near HCT stations (27 percent). This trend is also true for jobs (67 percent in Activity Centers, and 49 percent near HCT stations).
  - Of all non-work trips on a typical day in 2045, carpooling is forecast to have the greatest share of these trips (40 percent); transit mode share is lower (7 percent) and walk and bike trips show an uptick (making up 12 percent).
  - The increase in the share of people on transit (28 percent) and walking/bicycling (39 percent) will be much higher than increase in those driving alone (10 percent) The number of jobs accessible by transit will increase (33 percent) with per capita VMT decreasing 3 percent.
  - Ozone related emissions and greenhouse gases are all estimated to decrease and comply with established emissions limits for ozone, even as the demand for travel increases.

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<sup>1</sup> Please note, many study results presented in this document are compared to other baselines, such as the performance of future plans, as noted within the summary.

- 5) **Congestion will persist** on the region's roadways and on the rail system during the peak hour. It will grow despite the planned improvement projects, primarily due to the growth in demand (23 percent more people and 29 percent more jobs).
  - Roadway lane miles that are congested during the peak periods will increase (45 percent) with the daily vehicle hour of delay increasing (48 percent).

### **Opportunities and Constraints of Prevailing Conditions**

- 1) The considerable extent and the age of the transportation infrastructure requires the region to currently spend about 80 percent of transportation revenues on operations and maintenance, thus limiting the funds available for expanding existing infrastructure or services (highway and transit).
- 2) About 80 percent of the land-use, population and jobs forecast for the future (2045) is presently on the ground. Additionally, the distribution of jobs is sub-optimal between the eastern (31 percent) and western (61 percent) parts of the region. This is also the case for the ratio of jobs to housing (1.50 in east and 1.64 in west), which results in more and longer travel for those in the eastern parts of the region. Also, the jobs to housing ratios in the region between the central core, inner and outer suburbs are sub-optimal (core 2.3, inner 1.4 and outer 1.1), which creates more and longer travel for those in the outer suburbs.
- 3) The anticipated growth in the region (about 1 million jobs and more than 1 million people), with the limited change in the pattern of distribution of jobs across the region, is the single largest factor impacting the increase in travel demand and the patterns of travel. This will place a high uneven demand on the transportation system, as will the forementioned development pattern, the existing and unchanging uneven distribution of jobs between the east and west, and the fact that there is limited growth remaining to be influenced (less than 20 percent).

Due to the above factors stated above, large scale reimagination of land-use and demographic shifts are extremely challenging to implement.

## **3. What the TPB has Learned Through the Scenario Studies**

The TPB staff has conducted 11 scenario studies (listed in Table 1) exploring various land-use, transportation, and policy strategies that would help advance its transportation goals. The scenarios have examined various strategies in the context of the growth (in population, employment, and households) that the region anticipates (about 1 million more people and jobs). These studies have identified the potential improvements in the transportation system that various strategies would provide. While the findings from each specific strategy are summarized in the section below, overarching results indicate the following:

- The anticipated growth in the region is the most significant factor affecting the transportation system's forecast performance—increasing the number of trips that the system must accommodate.
- A combination of strategies involving land-use, travel pricing, highway, and transit projects, together with TDM (such as teleworking), retains the best potential to provide meaningful improvements in mobility and accessibility.
- In general, policies show a much greater potential to reduce Vehicle Miles Traveled (VMT) and greenhouse gas (GHG) emissions than individual project or groups of projects.
- No single modal strategy or project (transit, highway teleworking, pricing) will be able to yield substantial changes to mobility, accessibility and GHG reduction. While combinations of projects, such as expansive transit extensions, introduction of a regionwide BRT system, and express lane



networks with express bus service could have a more substantive impact on accessibility and mobility, they also are forecasted to have a limited impact on GHG emissions.

- To make progress on GHG reduction goals, transportation strategies that aid in changing the mode share and total amount of travel can help; however, the strategies that reduce energy consumption and transition vehicles to cleaner fuel, such as electric vehicles, are essential to progress.

## SCENARIO FINDINGS

It is important to note that the scenario analyses were intended to provide an “order of magnitude” understanding as to the potential impact of a strategy (or a combination) on the transportation system’s performance. The ability to implement the scenarios was not considered in any of the studies. Some of the scenarios are neither feasible nor practical to implement. Since the scenario studies examined a broad variety of approaches to improve the performance of the region’s transportation system, the findings are summarized, below, under a series of “What If” questions. For more details on these studies and findings please review the Appendix to this summary.

**Table 1 TPB Scenario Studies**

No.	Scenario Study Focus	Scenario Study Title
1	Impact of Growth, Highway projects and Transit projects	Long-Range Transportation Plan 2022 Update: No Build Tests
2	Transportation strategies to reduce on-road GHG emissions (50% by 2030 and 80% by 2050)	Climate Change Mitigation Study
3	Contributions from transportation towards region’s multi-sector 2030 GHG reduction goals	2030 Climate Energy Action Plan
4	Potential transportation system performance improvements from all projects in each TPB member’s Comprehensive Plan	All Build Analysis (LRP Task Force Phase 1)
5	Targeted congestion reduction through a package of pricing, policy and maximum highways and transit projects	Congestion Reduction Test (by 25 Percent Relative to 2040) (Preparation for LRP Task Force Phase 2)
6	Potential of ten packages of integrated land use, transportation infrastructure and pricing strategies	Aspirational Initiatives (LRP Task Force Phase 2)
7	Contributions from on-road sector towards region’s multi-sector 2050 GHG reduction goals (80% by 2050)	Multisector Working Group
8	Redistribute forecast jobs and housing to Activity Centers and near transit together with a network of variably priced lanes	CLRP Aspirations
9	Strategies to reduce on-road GHG emissions (80% by 2050)	What Would It Take
10	Extensive network of dynamically tolled lanes with bus rapid transit services	Regional Value Priced Network
11	Combination of land-use and transportation projects	Regional Mobility & Accessibility

**Please note the following caveats:**

Implications for development of the constrained element of the plan:

- Benefits from multiple strategies for mobility goals and GHG reduction goals are not always additive and at times are counteractive. In other words, a project, program, or policy might make progress on one goal while hindering a progress on another.
- Many of these complementary strategies will not be represented in the “constrained element” of the LRTP used for the Air Quality Conformity analysis, but the TPB will continue to focus on regional coordination to support the implementation of these other strategies.

Limitations of this document:

- The scenario studies referenced in this document and its Appendix were conducted at different times, for different purposes, and used different sets of assumptions, methodologies, and analysis tools. The findings reported in this document aim to take that into account; however, the reader should be cautioned against comparing the relative effectiveness of a particular strategy among other strategies across studies.

**What happens if the region only maintains and operates the existing system, and makes no capacity enhancements to the highway and transit system?**

TPB staff analysis shows that if the region continues to grow and no enhancements are made to the transportation system, congestion will increase significantly. VMT and GHG emissions change little in the two 2045 scenarios in Table 2 (i.e., differences relative to today are similar), largely because VMT and GHG emissions are mainly driven by population and employment forecasts (which are identical in both 2045 scenarios), rather than the projects.

**Table 2 Future Compared to Today: 2022 Plan Forecast vs. No Capacity Enhancements**

Differences: Future Compared to Today			
Scenario	Daily VHD	Daily VMT	GHG Emissions
2045 Growth + <a href="#">Highway &amp; Transit</a> projects 2022 LRTP	+48%	+15%	-11%
Growth + <a href="#">No Highway and Transit Projects</a> in 2022 LRTP	+80%	+14%	-13%

**What happens if the region implements only the transit projects in its current LRTP to accommodate the anticipated growth?**

TPB staff analysis shows that if the region continues to grow and only the transit projects in the current LRTP are implemented (but no highway projects), congestion will still increase substantially, but less than if there were no improvements. The transit-only scenario shows that daily VMT still will increase, but less compared to “no action:”. The same scenario also shows GHG emissions will be reduced, but the change is slight compared to the “no action” scenario.

**Table 3 Future Compared to Today: 2022 Plan Forecast vs. Only Transit Enhancements**

Differences: Future Compared to Today			
Scenario	Daily VHD	Daily VMT	GHG Emissions
2045 Growth + <a href="#">Transit</a> projects 2022 LRTP	+76%	+13%	-14%
Growth + <a href="#">No Highway and Transit Projects</a> in 2022 LRTP	+80%	+14%	-13%

**What happens if the region implements only the highway projects in its current LRTP to accommodate the anticipated growth?**

TPB analysis shows that if the region continues to grow and only the highway projects planned in the current LRTP are implemented, congestion will still increase in the future compared to today. However, the increase will be considerably less than if there are no improvements or if the LRTP implemented only transit projects. Daily VMT will also increase compared to today more so than the other scenarios, and GHG emissions reductions will be lower, compared to the scenarios with no improvements or with only transit projects.

**Table 4 Future Compared to Today: 2022 Plan Forecast vs. Only Highway Enhancements**

Differences: Future Compared to Today			
Scenario	Daily VHD	Daily VMT	GHG Emissions
2045 Growth + Highway projects 2022 LRTP	+51%	+16%	-11%
Growth + <a href="#">No Highway and Transit Projects</a> in 2022 LRTP	+80%	+14%	-13%

**What happens if the region pursues “maximum enhancement” strategies to accommodate future demand and improve system performance, including extreme improvements (likely impractical) to highway and transit capacity and high travel pricing?**

Three scenarios were examined, as a thought experiment, to determine the upper bounds of impact that the three broad category of strategies could provide. The two project options were not considered implementable, and the significant equity and economic impacts of the remaining VMT tax scenario was recognized as an issue. The analysis showed that while the extreme pricing and extreme highway capacity addition strategies could fully offset growth in delay and provide GHG reductions, these strategies are not practical given the socio, economic, environmental impacts. The study highlights how significant of an influence the current land-use and travel conditions in the region, together with the anticipated targeted growth, would have on the performance of the transportation system in the future.

**Table 5 Future Compared to Today: Plan Forecast vs. Maximum Enhancements**

Future Compared to Today			
Scenario	Daily VHD	Daily VMT	GHG Emissions
LRTP Future forecast	+82%	+21%	-21%
All bus and rail system headways of 1 minute, and all rail and BRT run times cut by 50%	+52%	+17%	-24%
Add one lane in each direction on all roadways (except local roads)	-20%	+30%	-16%
\$1 per mile VMT tax on all travel	-46%	-24%	-51

**What happens if the region pursues more practical capacity-adding and travel demand reduction strategies, those that TPB member agencies have examined, to accommodate future demand and improve system performance?**

The TPB’s Long-Range Plan Task Force (LRPTF) scenario study examined strategies that TPB member agencies put forth as “doable,” although there was no regional consensus on some of the strategies. These strategies included a more practical set of highway and transit capacity projects, although some of these could be viewed as “aggressive” (unprecedented expansion of the rail system, regionwide BRT system, regionwide express toll lane network, etc.). Many of these strategies offer marginal improvements in forecast performance. Metrorail extension and a network of Express/Toll lanes (packages F and A) offer slightly better, yet modest, improvement. Substantial policy changes and investments to advance transportation demand management strategies (package J) offers the most reduction in vehicle hours of delay, daily VMT and GHG emissions. Reducing transit fares could possibly have positive equity outcomes but shows marginal improvements across these same measures.

**Table 6 Comparisons to CLRP Forecast 2040 Conditions: Alternative Strategy Scenarios**

<b>Non-Roadway Capacity Strategies</b>				
Scenario	Daily VHD	Daily VMT	GHG Emissions	
<b>Comparisons to Today:</b>				
Constrained Long-Range Plan Forecast	+82%	+21%	-21%	
<b>Comparisons to CLRP Forecast 2040 Conditions:</b>				
BRT systems throughout region (Including additional streetcars in D.C., transitway from Waldorf to Branch Ave.)	-2%	<-1%	-1%	
Expanded Commuter Rail (VRE and MARC Growth Plans + Station Access improvements)	-2%	<-1%	0%	
Metrorail capacity additions (Including new line between VA and D.C., 2 <sup>nd</sup> station at Rosslyn)	-9%	-1%	-2%	
Extensions to Metro & Light Rails (including Metro to Gainesville, Potomac Mills, Purple line to Tysons and Alexandria)	-3%	-1%	-1%	
Transit Fares (Free transit for low income; reduced Metro fares in off-peak direction)	-2%	-1%	-1%	
<b>Roadway Capacity Strategies</b>				
Network of Express Toll lanes - HOV free, & BRT	-11%	<1%	0%	
New river crossing to north with tolls, express bus	-3%	+1%	+1%	
<b>Travel Demand Reduction and Operational Strategies</b>				
TSMO - Technology, Roadway design changes, Regional Incident Management, etc.	-8%	+2%	-1%	
Amplified TDM –expanded telework, increased commuter parking costs in Activity Centers, expanded transit subsidies, employer parking cash out, etc.	-24%	-6%	-7%	

**What happens if policies could reduce overall travel OR better distribute travel throughout the day?**

Various policies and practices, including those at workplaces and businesses, could influence the number of trips a household makes in a day or the time of day during which these trips are made (given that the region’s highway and transit system are congested during the peak hour). This study shows that a set of actions that significantly reduced the number of trips made by a household during a day would be able to offer significant decreases in congestion, VMT, and GHG emissions. The feasibility of such actions and its socio-economic impacts make this an unlikely practical strategy. Actions, however, that would result in a more uniform distribution of daily trips also offset the increase in delay, although they are forecasted to also increase daily VMT.

**Table 7 Future Compared to Today: Plan Forecast vs. Alternative Scenarios**

Differences: Future Compared to Today			
Scenario	Daily VHD	Daily VMT	GHG Emissions
2040 Growth + Highway and Transit projects	+82%	+21%	-21%
Growth + D.C. Cordon fee + <a href="#">Parking Fees everywhere</a> (\$25/more commuters; \$5/more per hour non-work)	+31%	+14%	-26%
Growth But Household <a href="#">travel reduced by 50%</a>	-46%	-11%	-42%
Growth + Uniform <a href="#">distribution of peak period demand</a>	29%	25%	-19%
Growth + Uniform <a href="#">distribution of demand all day</a>	-7%	24%	-20%

**What happens if the region makes significant investments in land-use focusing around HCT/AC?**

The TPB has examined land-use in nearly all its scenario studies. The TPB studies have found that the optimization of land-use by collocating housing and jobs and focusing more development around Metrorail reduces road congestion, improves access to bicycle/pedestrian facilities, and makes Metrorail a more viable option for more people. For example, one study found that land-use strategies could reduce vehicle hours of delay by 18 percent, daily VMT by 3 percent, and GHG emissions by four percent.

The studies have also found that balancing the region’s East/West divide by reallocating jobs and housing more evenly across the region and overall and increasing the number of households in the region can reduce the long commute times, including for the workers currently living outside of the region.

**Table 8 Comparisons to CLRP Forecast 2040 Conditions: Alternative Strategy Scenarios**

Scenario	Daily VHD	Daily VMT	GHG Emissions
<a href="#">Comparisons to Today:</a>			
<a href="#">Constrained Long-Range Plan Forecast</a>	+82%	+21%	-21%
<a href="#">Comparisons to CLRP Forecast 2040 Conditions:</a>			
<a href="#">Additional Housing and Redistribution of job and housing growth around HCT stations, Activity Centers regionwide</a>	-18%	-3%	-4%

**What happens if the region prices travel to accommodate future demand and improve system performance?**

A tax on every mile of travel (at levels much higher than other peer studies) combined with a cordon fee has the potential to fully offset all growth in daily delay and VMT while reducing GHG below current levels. A lower level of implementation and different form of pricing (pricing parking) would result in increased delay and VMT in the future albeit noticeably less than without these fees.

**Table 9 Future Compared to Today: Plan Forecast vs. Maximum Enhancements**

Differences: Future Compared to Today			
Scenario	Daily VHD	Daily VMT	GHG Emissions
2040 Growth + Highway and Transit projects	+82%	+21%	-21%
Growth + D.C. Cordon fee + <a href="#">VMT Tax @ \$1/mi</a> (Avg. for 1 car household \$13,500/year) (Note the results are largely driven by the VMT Tax).	-46%	-24%	-51%
Growth + D.C. Cordon fee + <a href="#">Parking Fees everywhere</a> (\$25/more commuters; \$5/more per hour non-work)	+31%	+14%	-26%

**What combination of (transportation, land-use, and vehicle technologies/fuels) strategies result in the most GHG reductions?**

The TPB’s Climate Change Mitigation Study shows that the most aggressive vehicle technology OR travel mode shift and behavior strategies, even with a clean electric power grid (100 percent carbon-free by 2035), would not be sufficient for the region to attain its 2030 GHG reduction goal (50 percent below 2005 levels). The most aggressive clean vehicle strategy together with a clean electric grid could help the region attain its 2050 GHG reduction goal (80 percent below 2005 levels).

A combination of the most aggressive strategies to transition to clean fuel and change travel mode and behavior, together with a clean grid, would still not achieve the 2030 GHG reduction goal, and would help attain the 2050 GHG reduction goal.

It is worth noting the most aggressive strategies to change travel mode and behavior includes a combination land-use, pricing, and transit projects. The scenario findings for most aggressive strategies (Vehicle Technologies 2 (VT2), Mode Shift and Travel Behavior Strategies 3 (MS.3) and Combination Strategy 4 (Combo.4) are presented in Table 10. Table 11 shows the estimated change in VMT from cars and light-duty trucks from MS.3 strategies only, as the vehicle technology strategies are not indicated to change VMT. TPB staff analysis shows that even with implementation of the most aggressive strategies to change travel mode and behavior, future VMT will grow. However, these aggressive strategies can mitigate its growth.

**Table 10 CCMS Summary of GHG Reductions Estimated for All Transportation Scenarios Under all Electric Grid Cases (% Reductions from 2005 Level)**

Scenario	Key Components	2030			2050		
		Ref. Grid	Mod. Grid	Clean Grid	Ref. Grid	Mod. Grid	Clean Grid
<b>Baseline</b>	Projects, programs, and plans in the Visualize 2045 plan; base assumptions for vehicle technology; population growth through 2050	-14%	-15%	-15%	-14%	-14%	-15%
<b>VT.2</b>	100% of new LD vehicle sales are EVs in 2030; 50% of new M/HD truck sales are EVs in 2030, with 100% by 2040; 100% of buses on the road are EVs by 2030; biofuels/renewable diesel make up 20% of diesel fuel use in 2030 and 30% in 2050	-28%	-29%	-34%	-76%	-83%	-93%
<b>MS.3</b>	Additional housing, nationwide redistribution of jobs and housing to Activity Centers and near HCT stations, DC cordon pricing of \$10 to enter downtown, and VMT-fees of \$0.05 per mile in 2030 and \$0.10 per mile in 2050, free transit; all workplace parking priced by 2050 (not just in activity centers), 15% reduction in transit travel time by 2030 and 30% by 2050; 40% telework, increased bike/ped/mobility	-26%	-26%	-26%	-27%	-28%	-28%
<b>COMBO.4</b>	Combined strategies from VT2 and MS3, together with advanced use of technology for traffic operational efficiency and connected and automated vehicles	-38%	-39%	-43%	-82%	-87%	-95%

Note: 1) Cells shaded in green highlight figures that met the CCMS goal level of emissions reductions. Those shaded in yellow meet the level of on-road transportation GHG reductions assumed in the 2030 CEAP. 2) Ref. Grid is a Reference Case, current policies and renewable portfolio standards in D.C., MD, VA. Mod. Grid is a Modified Reference Case, which is slightly more aggressive than the Reference Case; and a Clean Grid Case assumes a 100% carbon-free grid by 2035.

**Table 11 Estimated Change in VMT from Cars and Light-Duty Trucks from MS.3 Strategies**

	2005	2018	2030 Baseline Forecast	2030 Under MS.3 Scenario	2050 Baseline Forecast	2050 Under MS.3 Scenario
Passenger car and truck VMT (billions)	35.04	38.11	42.23	33.73	47.01	35.37
% Reduction from baseline forecast				-20%		-25%

## 4. What the TPB Members Can Do with this Information

The TPB’s intent has always been for the results of the scenario studies to inform the transportation projects, programs, and policies that its member agencies decide to implement in the region, in a manner that advances the regional transportation goals and priorities. The scenarios studies have identified various strategies through which this may be accomplished. The 2022 update of Visualize 2045 includes an entire chapter (Chapter 6, Strategies for a Brighter Future) dedicated to discussing these priority strategies. The TPB believes that the priority strategies should be increasingly represented in each iteration of its LRTP.

The TPB has agreed, in Resolution R-19 2021, to update its current LRTP, with a special emphasis on using the findings of scenario analyses to inform updates to the projects, programs, and policies in the constrained element of the LRTP. For its 2024 update of Visualize 2045, the TPB is anticipating a substantive update to the projects in the constrained element of its plan that is more reflective of the results of these scenarios studies and advances the region’s transportation goals and priorities as expeditiously as possible.

The TPB member agencies should consider these priority strategies along with local planning and programming goals, where within the authority of the member agencies, in developing their inputs to the LRTP update. In the TPB’s own approved plan, Chapter 9, “What Happens Next?”, speaks to the importance of focusing on implementation. Each jurisdiction and agency can act by identifying the region’s priority strategies that work best at the local level and where possible, take steps to accelerate delivery.

By working together, our region can continue to make headway on its goals as it establishes policies and makes investments in programs and projects for future generations.